Downy Mildew

Downy mildew is one of the most common and important foliar diseases of cucurbits. It is caused by the fungal pathogen *Pseudoperonospora cubensis*. This pathogen only infects cucurbit hosts, but may cause major losses in cucumbers, melons, squash, and pumpkins.

Symptoms of downy mildew are almost entirely confined to the leaves. Small light green to yellow lesions first appear on the upper surface of the leaf. Notably, these lesions appear angular and are limited by the veins of the leaf. As the infection develops, the leaf yellowing spreads, and leaves may become brown and necrotic.

Downy mildew is dispersed by air under dry conditions but requires a period of at least 6 hours of moisture in order for the pathogen to establish itself on the plant. Mobile spores (zoospores) make their way to the stomata where they produce germ tubes and enter the plant. When conditions favor the formation of spores, they are produced on the underside of leaves and give the underside of the leaf the downy appearance from which the disease gets its name.

The downy mildew pathogen is an obligate parasite, meaning that its season to season survival is dependent on the presence of cucurbit hosts. Due to this, downy mildew can be eliminated by removing potential hosts from the area. Additionally, watering practices may have an impact on management of this disease. Limiting watering to the morning allows leaves to dry more quickly and may prevent the pathogen from infecting the plant. Watering from above the plant may also spread the pathogen and allows for long periods of leaf wetting. Copper fungicide products are effective in control of downy mildew.
## Upcoming Events for May 2019

### Hancock County Events

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Time</th>
<th>Location</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Hancock County Master Gardener Spring Social</td>
<td>6:30 p.m.</td>
<td>Mezzo Mezzo Restaurant, Bay St. Louis</td>
<td>Join the Hancock County Master Gardeners for dinner at Mezzo Mezzo’s and a presentation on “Plants, Plants, and More Plants” by Dr. Allen Owings, Emeritus Professor of Horticulture at LSU and Senior Horticulturist for Bracy’s Nursery. Tickets $20. Please contact Albert Ghergich at: <a href="mailto:albergich@gmail.com">albergich@gmail.com</a> for ticket information.</td>
</tr>
<tr>
<td>14</td>
<td>Beekeeping for Beginners</td>
<td>6:00 p.m.</td>
<td>Kiln Public Library</td>
<td>This program will provide an introduction to beekeeping for homeowners including native plants for bees, basic bee biology, recommended equipment, and how to manage your bees throughout the year. Presenter is Christian Stephenson, Hancock County Extension Agent.</td>
</tr>
<tr>
<td>16</td>
<td>Composting</td>
<td>2:00 p.m.</td>
<td>Bay St. Louis Public Library</td>
<td>This program will include information on how to start and maintain compost as well as common problems encountered in composting. Production of compost tea and vermicompost will also be discussed. Presenter is Christian Stephenson, Hancock County Extension Agent.</td>
</tr>
<tr>
<td>22</td>
<td>Beekeeping for Beginners</td>
<td>2:00 p.m.</td>
<td>Pass Christian Public Library</td>
<td>This program will provide an introduction to beekeeping for homeowners including native plants for bees, basic bee biology, recommended equipment, and how to manage your bees throughout the year. Presenter is Christian Stephenson, Hancock County Extension Agent.</td>
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### Harrison County Events

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<tr>
<td>7</td>
<td>Outreach Meeting</td>
<td>The Natural Resources Conservation Service and Farm Services Agency will host an Outreach Meeting to discuss programs for clientele beginning at 5:00 p.m. at the Orange Grove Library located at 12135 Old Hwy. 49 in Gulfport. Other topics include Crop Insurance, Farm Loans, and the Farm Bill. Tim Ray with Mississippi State University, Harrison County Extension will also be in attendance to discuss his role in the community.</td>
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<tr>
<td>16</td>
<td>Chronic Wasting Disease (CWD) Workshop</td>
<td>With deer hunters’ concerns about the spread of Chronic Wasting Disease (CWD), a fatal, neurological disease that affects members of the deer family, The Hancock/Harrison Forestry and Wildlife Association will host a CWD workshop at the Hancock County Extension office located at 856 Suite B, Hwy 90, Bay St. Louis. Registration will begin at 5:30 p.m. Mr. Caleb Hinton, Private Land Biologist with Mississippi Department of Wildlife, Fisheries, and Parks, will be the featured speaker for the event. The workshop is free to current members or $10.00 per individual. A meal will be provided. Preregistration is required by calling Tim Ray at 228-865-4227 or by email at <a href="mailto:tim.ray@msstate.edu">tim.ray@msstate.edu</a>.</td>
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<tr>
<td>22</td>
<td>Private Applicator Training</td>
<td>1:00 p.m. until 5:00 p.m.</td>
<td>Harrison County Extension Office, 2315 17th Street, Gulfport, MS</td>
<td>This training is for those who own or lease property for agricultural purposes. $20 per individual. No preregistration necessary</td>
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### Pearl River County Events

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<thead>
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<tbody>
<tr>
<td>7</td>
<td>Pearl River-Stone County Forestry Association Meeting</td>
<td>12:00 noon</td>
<td>The Sawmill Restaurant, 2205 Highway 49, Wiggins, MS</td>
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<tr>
<td>13</td>
<td>Osteoporosis Prevention</td>
<td>11:00 a.m. until 12:00 noon</td>
<td>The Senior Center of South Pearl River County</td>
<td>Presenter: Dawn Vosbein, Pearl River County Extension Agent. No RSVP required.</td>
</tr>
<tr>
<td>11</td>
<td>Landscaping with Wildflowers</td>
<td>10:00 a.m. until 11:00 a.m.</td>
<td>The Crosby Arboretum, Picayune, MS</td>
<td>Learn methods for planning and establishing areas of low-maintenance perennial and annual Mississippi wildflowers that are suited to your property’s specific environmental conditions with Pearl River County Extension Agent, Dr. Eddie Smith. Program is $3 for members and $5 for non-members. Reservations are requested. Call 601-799-2311 to register for the program.</td>
</tr>
<tr>
<td>11</td>
<td>Square Foot Gardening</td>
<td>11:00 a.m. until 12:00 p.m.</td>
<td>The Crosby Arboretum, Picayune, MS</td>
<td>Want to grow your own vegetables, but think you don’t have the space, time, or energy? Join Pearl River County Extension Agent Dr. Eddie Smith to learn just how easy and fun this method of gardening can be. Program is $3 for members and $5 for non-members. Call 601-799-2311 to register for the program.</td>
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### Stone County Events

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Garden Calendar: May

Planting
* Plant Crape Myrtles when plants are in color.
* Plant annuals and perennials early in the month and keep well watered.
* Set out Chrysanthemums.
* Continue planting Gladiolus. Can also plant Calla Lilies, Ginger Lilies, Tuberose, and Cannas.
* Take Hydrangea cuttings and let root in coarse sand.
* Plant in the shade: Impatiens, Coleus, Sweet Alyssum, Lobelia, and annual Dianthus.
* Plant in the full sun: Verbena, Periwinkle, Ageratum, Marigolds, Zinnas, Petunias, Wax Begonia, Clematis, Four-o'clocks, and Portulaca.
* Plant these Vegetables and Fruits this month: Cucumber, Tomato, Pepper, Squash, Peas, Beans, Eggplant, Corn, Okra, Parsley, Watermelon, and Cantalope.

Pest Control
* Keep an eye on garden pests and diseases: red spiders, thrips, aphids, lacebugs, lacewings, mealy bugs, caterpillars, slugs, snails, mildew, fungus, and crown rot.

Pruning
* This is the last month to prune Azaleas and Camellias as new buds are formed in June.
* Gardenias can be pruned by bringing a bouquet inside to beautify the house.
* Cutting bouquets regularly will keep your plants pruned and prolong the blooming season.
* Cut in early morning or late afternoon and put into water immediately.
* Remove seedpods from bulbs and irises; they sap the plants’ strength.

Mulch
* Mulch layer helps maintain moisture and can protect roots from extremes in temperature.

Miscellaneous
* Water deeply during weeks that it does not rain.

Home Accent
* Repot house plants during their active growing period: April through September.
* May is a good month to repot and divide overcrowded ferns.

In Bloom
Confederate Jasmine, Gardenias, Begonias, Impatiens, Salvia, Geraniums, Roses, Hydrangeas, Magnolias, Azaleas, Clematis, Phlox, Sweet William, Deutzia, Honeysuckle, Golden-Rain Tree, Pomegranate, Mock Orange, and Weigela.
Hummingbirds are attractive and interesting visitors to Mississippi gardens. They are extraordinarily agile fliers, and watching them fly swiftly or hover around the backyard can provide hours of enjoyment. Hummingbirds get their name from the sound made from the rapid flapping, about 80 times per second, of their wings. Hummingbirds have a long tapered bill that is used to obtain nectar from flowers. Hummingbirds are among the smallest of birds, with most species measuring 3-5 inches in length. The smallest is the bee hummingbird, which is just over an inch long and weighs less than a penny.

Hummingbirds are native only to the Americas and range from southeastern Alaska to Southern Chile. Of the more than 300 species of hummingbirds, only 21 can be found in North America, with most remaining in the tropics year round. While several species of hummingbirds can be found in Mississippi, the only species that breeds in the eastern United States is the Ruby Throated Hummingbird. Other hummingbirds may occasionally winter in coastal Mississippi or may be found here in small numbers during the spring and fall. Other species seen in Mississippi include the Rufous Hummingbird, Black-chinned Hummingbird, Calliope Hummingbird and Allen's Hummingbird. The majority of hummingbirds found in the United States migrate south to Central and South America in the winter.

Providing feeders for hummingbirds is the easiest way to attract them to your garden. Many feeders are available commercially along with nectar. Hummingbird nectar can also be made by mixing one part refined sugar to four parts water and boiling to dissolve the granules. While hummingbirds are attracted to bright colors, and red in particular, it is not necessary to add food coloring to the nectar mixture for hummingbird feeders. Feeders should be cleaned and changed regularly, particularly in hot weather. Keep in mind that male hummingbirds are territorial, and so placing feeders in several areas around the garden will provide for more hummingbirds. In addition to nectar, hummingbirds also feed on small insects and spiders, so avoid use of insecticides in the garden when possible.

Plants can also be chosen to provide food for hummingbirds. Flowers favored by hummingbirds are tubular in arrangement or shape, scentless, brightly colored, and easy for hummingbirds to hover around. Examples of good plants for hummingbirds include annuals such as begonias, petunias and zinnias, and perennials such as bee balm, cardinal flower and lantana. Azaleas, red buckeye, and butterfly bush are amongst the shrubs favored by hummingbirds.

Water sources for hummingbirds are also important. They may take in as much as eight times their body weight in a single day. Add small rocks to existing birdbaths to provide space for hummingbirds. The addition of a mister is also a good source of water.
Basic Backyard Wildlife Habitat

Creating your backyard habitat can be very easy once you understand that wildlife, just like people, have three basic needs. These needs food, water, and cover promote use and provide the lifecycle needs of wildlife. A successful backyard habitat must include all three needs. It takes only a small investment of time to make your yard or garden “wildlife friendly” by adding these essentials.

You can provide food in two ways, artificial feeding - bird feeders, squirrel feeders, etc. and the preferred, natural vegetation - planting a variety of native trees, shrubs, grasses, and flowering plants that provide nuts, seeds, nectar, fruit, and other sources of nourishment. It provides a seasonal approach that is enjoyable from a gardening and recreational wildlife standpoint. This will encourage a wider range of creatures already used to using these plants. Using natural vegetation, compared to providing artificial feed, is less costly over time and is easier to maintain. Remember, including plants that provide foraging opportunities in the winter offers an almost year-round supply of food.

Providing water for both drinking and bathing is vital to wildlife. You can include it by having birdbaths, drippers, or small ponds. Garden ponds that are large enough to include water animals (fish, frogs, toads, salamanders, snails) as well as water plants add beneficial elements that complement most backyard habitat settings. Surrounding the pond with plants adds to the attraction for wildlife. Be sure the water source is dependable year-round.

Nesting and shelter areas where wildlife are protected from the weather and predators is essential. Providing a diversity of plant material that includes evergreen and deciduous trees, vines, shrubs, herbaceous plants, grasses, and ground covers lets wildlife select the right areas for their feeding, nesting, and shelter needs. Ideal habitats include plants of various sizes, densities, and types. Evergreens are particularly valuable for winter cover. Grouping plants close to sources of food and water provides the cover wildlife need to feel safe while feeding or drinking. Of course, proper selection of plants includes those that provide food as well as good cover and nesting. Living plants are only one way to provide shelter and nesting areas. Using bat houses, bird houses, toad houses, and other artificial shelters is an easy way to meet this basic need.
### Diseases of Tomatoes

<table>
<thead>
<tr>
<th>Fungal</th>
<th>Bacterial</th>
<th>Viral</th>
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<tbody>
<tr>
<td>– Fusarium and Verticillium Wilts</td>
<td>– Bacterial Spot and Speck</td>
<td>– Tobacco mosiac</td>
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<tr>
<td>– Early Blight</td>
<td></td>
<td>– Spotted wilt</td>
</tr>
<tr>
<td>– Fruit Anthracnose</td>
<td></td>
<td>– Tomato yellow leaf curl</td>
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</tbody>
</table>

#### Wilt Diseases
- Soil borne pathogens
- Plants generally affected through roots
- Rotation (at least 2-3 years)
- Plant VF or VFN resistant varieties

#### Early Blight
- Survives in infected plant debris
- Spores are wind dispersed
- Infections occur first on oldest leaves
- Rotation (at least 2-3 years)
- Sanitation
- Apply Fungicides

#### Fruit Anthracnose

#### Buckeye Rot

#### Blossom End Rot
- Caused by insufficient calcium when fruit are forming
- Results from excessive nitrogen fertilization
- Rapid plant growth
- Drastic fluctuations in soil moisture

#### Tomato Spotted Wilt

#### Tobacco Mosaic

#### Tomato Yellow Leaf Curl

#### Growth Cracks

#### Soil Rot

#### Bacterial Spot and Speck

#### Bacterial Spot and Speck

#### Glyphosate damage
“What do I need to spray for ___________?” Fill in this blank with the name of one of the hundreds of insect pests we have here in Mississippi, and you’ve got one of the most common questions asked at county Extension offices, Co-ops, and retail nurseries. This may seem like a simple question, but the answer is rarely as simple as “Oh, just spray them with ___________,” and that will take care of them.” Information is the key to answering this question properly, and this information needs to move two ways. I need to get a lot more information from you, and then I probably need to provide you with a lot more information than just the name of an insecticide.

The first piece of information I need is the proper identification of the pest. I know that you just told me what pest you are concerned about, but there is a good chance this identification is not correct. In my experience as an Extension County Agent, this happens roughly half the time. Clients think they have a termite infestation when they really have ants, or they think they have ants when they really have termites. The “mites on the azaleas” are probably lace bugs, and the “stink bugs on the tomatoes” may be leaf-footed bugs instead. Sometimes, the problem is not due to insects at all. The “chinch bugs in my St Augustine lawn” may actually be brown patch or take-all disease. Sometimes it is the other way around—what the client thinks is some non-insect problem is actually due to insects. The “downy mildew on the bottoms of my shrub leaves” may well be scale insects, and the “blight on the crape myrtles” is probably sooty mold caused by aphids. The “wilt disease that’s killing my squash” is probably either squash bugs or squash vine borer, and the “disease problem on the lantanas” is almost surely lantana lace bug injury. The “rabbits eating my tomato transplants” may actually be rabbits, but it could also be cutworms. Proper pest identification is critical. I do not like to provide any treatment recommendations until I am sure of the pest identification. Having your insect pest identified correctly will save you a lot of time and money.

**Termites**

Termites are active 365 days a year, but we tend to be more mindful of them in the spring because this is when they swarm. Having large numbers of termite swarmers emerge inside a building is a sure sign the building is infested and needs to be professionally treated. It is also a good idea to be alert for signs of termite infestation when doing home repairs or maintenance or when working in flower beds around the foundation of a building. It is even more important to know when your house was last treated for termites.

Swarming termites are attracted to light at night. In the spring when termites are swarming, you can prevent attracting the swarms by turning off external lights around your home. Limiting the internal lights will also help keep the swarming termites from trying to enter your home.

If you don’t have an active termite contract on your home or at least have a record of when the house was last treated, it is probably time to have the house treated. See Extension publication 2568, Protect Your House from Termites, for information on how to recognize signs of termite infestation and for answers to common questions about termite treatments.
Quick Bites
May 2019

Quick Bites programs are offered through the Mississippi State University Extension Service and provide information in a wide variety of topics through interactive video. The programs are held during lunch (12-1 pm) on Thursdays. Sessions will be held in Bost 409 for those who are on campus. Contact your county office to participate via interactive video.

May 2
A May Day Experience
Lynette McDougald, Instructor
Plant & Soil Sciences

We will address consideration of planting options for summer cut flower garden, proper pruning of shrubs and trees to use in arrangements, and grand design styles for summer fun.

May 23
Fire Ants: Mound Builders
Dr. Blake Layton, Extension Professor
Biochemistry, Molecular Biology, Entomology and Plant Pathology

We have had cool, wet spring weather and the fire ants have been busy... Join Dr. Layton as he shares the facts and fiction about controlling fire ants in your home landscape and lawn.

May 9
Starting Your Family Tree Online
DeeDee Baldwin, Assistant Professor
Mitchell Memorial Library

Let’s learn the basics of using Ancestry.com and FamilySearch.org, including starting your tree, employing search strategies to get the best results, and taking advantage of free resources.

**Please note that participants should have a laptop with internet access for the best experience.

May 30
Hazardous Preparedness: To-Do List
Anne Howard Hilbun-Benoit, Instructor
Extension Center for Government & Community Development

We all know that hazardous situations are bound to happen. Anne Howard will focus on personal preparedness so that we can be ready when the need arises. The concepts discussed will include planning, emergency kits, situational awareness, and calling for help.

Developed by the Extension Center for Technology Outreach

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